

MOLECULAR COMPONENTS OF COAL AND COAL STRUCTURE. D. Bodzek and
A. Marzec. Department of petroleum and Coal Chemistry. Polish
Academy of Sciences. 44-100 Gliwice, 1 Maja 62 St. Poland.

High volatile bituminous coal was extracted at room temperature by means of 18 solvents having their electron-donor /DN/ and -acceptor /AN/ properties quantitatively determined. Extracts were analysed by field ionization and high resolution mass spectrometry. Extractable compounds having molecular masses in 200-600 a.m.u. range constitute 30% wt. of coal organic material. Hydrocarbons / C_nH_{2n-6} up to $C_{nH_{2n-34}}$ /, nitrogen compounds /CHN, CHN_2 , CHN_3 /, oxygen compounds /CHO, CHO_2 / and nitrogen-oxygen compounds /CHNO, CHN_2O , $CHNO_2$, CHN_2O_2 , CHN_3O / were identified in the extracts. On the basis of extraction data /extract yields, solvent DN and AN numbers/ and MS analysis the conclusion has been drawn that extractable compounds are bonded to coal macromolecular network by electron-donor-acceptor bonds. These bonds are destroyed during extraction by substitution activity of solvents. Solvent substitution capabilities depend on their donor and acceptor numbers.